Power Companies

Rating methodology for global power companies

Standard & Poor's rating methodology for global power companies incorporates two basic components: business profile (qualitative analysis) and financial profile (quantitative analysis). The two components are inextricable. A utility with a strong business profile, for example, could have less financial protection than one with a weaker business profile and still achieve the same rating. Conversely, a utility with a weak business profile would require a more robust financial profile than one with a stronger business profile in order to get the same rating. This basic concept is illustrated by the matrix in table 1.

Table 1
Global Utility Rating Matrix

Financial Profile	Business Profile		
	Strong	Average	Weak
Strong	AAA	AA	A
Average	AA	A	BBB
Weak	A	BBB	BB

Business profile

Standard & Poor's utilizes business profile assessments to measure a power company's qualitative credit fundamentals. Business profiles are expressed numerically on a scale of 1 (strong) to 10 (weak). To determine a business profile, Standard & Poor's analyzes the key qualitative business or operating characteristics:

- Regulation,
- Markets,
- Operations,
- Competitiveness, and
- Management.

Identifying utility types

The weighting or analytical emphasis that each business profile factor receives is strongly influenced by the type of utility. Standard & Poor's has identified four types of utilities *(see table 2)*. The type is determined through analysis of the influence of government ownership (if any), the degree of financial stability derived from the structure of the industry, and the relative competitiveness of the system. There are both investor-owned and government-owned utilities found in all four types, and more than one type may exist within the same country.

Type I utilities (supported) operate within systems where the utility receives overwhelming government and regulatory support. This support can be explicit, as in cases where a government guarantees a utility's obligations, such as in Canada. Or it can take the form of strong and obvious implicit support, such as in Greece. The government may facilitate the utility's access to external sources of capital, especially where the utility is a direct instrument of government policy. Type I utilities need not be completely owned by government, but government ownership is usually present. Before attributing support from government, Standard & Poor's reviews the track record of assistance, the procedures and timeliness of support mechanisms, the government's policy objectives for utility ownership, and financial policies. Standard & Poor's looks for evidence that the government would stand behind a debtor in time of financial need. Written and oral statements consistently made and significant supportive actions taken over time build credibility. In addition, Standard & Poor's considers the incentives for the government to provide tangible support. Questions asked include: What would be lost if a payment were missed? Would the borrower be able to continue to operate if it defaulted on a debt? Is the name of the borrower closely tied to the government in the market's perception, so that a default by the borrower would cause the government difficulties in the capital markets? What are the political realities?

Type II utilities (sheltered) conduct business where the utility is sheltered from competition and financial variability by the government or regulator. Sheltered utilities are not necessarily owned by government. Japanese investor-owned utilities offer an example. These vertically integrated utilities have historically been insulated from competition and protected by a very cooperative, coordinated rate-setting process. While generally highly leveraged, these utilities' financial results are quite stable. Another example is in the U.S.: municipally owned utilities have traditionally been sheltered from competitive forces and have enjoyed significant rate-setting flexibility. (While categorized as Type II utilities, Standard & Poor's analysis of municipal utilities is evolving, as deregulation measures aimed at investor-owned utilities are pressuring municipal utilities to create competitive markets. Moreover, an increasing number of city councils or other ratemaking bodies are reluctant to make either upward or downward rate adjustments. For example, it may be politically unpalatable to end the subsidization of residential rates by commercial and industrial customers, even if necessary to achieve cost of service rates that are more competitive for the commercial and industrial classes. Similarly, the ability to effect rate reductions necessitated by a more competitive environment may be frustrated by a city's general fund's dependence upon transfers from the electric system.)

Type III utilities (exposed), such as vertically integrated utilities in the U.S. or distribution companies in the U.K. or Victoria, Australia, evidence some regulatory insulation from the forces of competition, mixed with exposure to business risk. Although Type III utilities have certain franchise monopoly characteristics, their financial success may hinge more on their ability to control costs and provide high-quality service.

Finally, Type IV utilities (commodity) are essentially unregulated as to revenue or return. Unregulated generators, such as in Argentina and Chile, owe their success or failure to their ability to operate well at low cost, as they are subject to the sometimes harsh realities of supply and demand.

For Type I utilities, ratings will reflect the credit quality of the entity providing explicit or strong implicit support. For Type II utilities, the business profile factors of regulation and markets are weighted more heavily than competitiveness or management, because of the supportive regulatory umbrella. Conversely, for Type IV utilities, operations, competitiveness, and management are the most heavily weighted factors. Business profile factor weightings for Type III utilities are more evenly distributed.

An important point is that many utilities are gradually transitioning from Type II to Type III and perhaps to Type IV. As many countries' electricity sectors undergo structural reform and introduce competition, Standard & Poor's will weigh more heavily the business profile factors of operations, competitiveness, and management. Business profile assessments will fall and rating downgrades could result, absent offsetting improvement in financial profiles.

Typical business profiles

Large transmission systems and regulated distribution systems (the "wires" business) business profile assessments tend to fall within the 1-4 range. Generators generally receive business profile assessments in the 7-10 range.

The business profile assessment of electric systems with elements of integration—either fully vertically integrated from generation through transmission to distribution or partially integrated—is based on a weighted approach, reflecting the relative importance of each business segment to the overall credit.

Table 2
Utility Types

	Type 1	Type II	Type III	Type IV
	Supported	Sheltered	Exposed	Commodity
Example	France, Ontario	Japan, Denmark	U.S., U.K.	Genco
Primary credit determinants	Owner or guarantor	Structural protection, Rate flexibility	Cost control, Service quality	Performance and cost
Debt-servicing capacity	Not limited by stand-alone risks	Usually highly leveraged	Moderate	Limited

Financial Ratio Guidelines

	Funds from operations interest coverage (x)		Funds from operations to total debt (%)		Total debt to total capital (%)	
	A	BBB	A	BBB	A	BBB
Transmission and distribution	3.25	2.0	15	10	55	65
Generators	6.75	4.25	42	27	35	45
Vertically integrated cos.	4.25	2.75	27	18	45	56

Note: Financial ratio medians are derived from Standard & Poor's financial projections for companies rated both publicly and confidentially.

The relative importance of each reflects their contributions of cash flow and operating income and the amount of capital invested. In addition, credit is given for the benefits of integration. For example, a company owning integrated generation and distribution operations benefits from the natural hedge that integration creates for both businesses. Integrated utilities tend to have business profiles in the 3-7 range.

Because of the importance of the different analytical emphasis accorded to the five business profile factors as influenced by the type of utility, the overall business profile assessment can diverge from the general expectations stated above. For example, certain generators can have strong regulatory support, and would therefore be characterized as Type II utilities. Consequently, their business profile assessment could be 3-4, reflecting heavy weighting of the supportive regulatory structure.

Financial profiles

Standard & Poor's measures financial strength by a utility's ability to generate consistent cash flow to service its debt, finance its operations, and fund its investment. Standard & Poor's focuses on a utility's financial results for the last five years and on pro forma, five-year projections.

Because of distortions caused by vastly differing asset valuation practices and depreciation policies around the world, certain leverage and earnings ratios are not particularly useful when conducting comparative analysis. As a consequence, the proper analytical focus should be on "real" stocks and flows, namely, levels of debt, cash, and cash flow. Financial parameters that are increasingly viewed as relevant and reliable are coverage of fixed financial charges by cash flow and cash flow from operations to total debt. Less comparable measures, such as shareholders' equity, leverage, and reported earnings, are also reviewed, but deemphasized.

Tightly regulated transmission and distribution utilities generally face limited business risk and can operate with relatively low operating margins and high leverage. Conversely, generating companies operating in a very competitive environment face much higher business risk and attendant cash flow volatility, and therefore generally can sustain only modest levels of debt. The table above displays guidelines for certain key financial ratios for rated transmission and distribution companies, generators, and vertically integrated utilities. Because of the different types of utilities—supported, sheltered, exposed, commodity—financial ratios for any particular entity may differ significantly from the guidelines. However, the ratios in the table are useful in demonstrating the typical differences in financial standards appropriate due to broad differences in business risk.

Profitability. Profit potential is a critical determinant of credit protection for investor-owned utilities. A company that generates higher profits has a greater ability to generate equity capital internally, attract capital externally, and withstand business adversity. Earnings power ultimately attests to the value of the firm's assets. Profit is less significant for non-U.S. government-owned utilities, but still relevant because higher operating margins provide additional bondholder protection on a stand-alone basis. For U.S. municipal utilities, Standard & Poor's does not measure "profit" per se, but rather looks at financial health as measured by excess margins on a cash flow basis and their ability to provide coverage of revenue bonds and off-balance-sheet obligations, as measured through fixed-charge coverage.

The more important measures of profitability are:

- Return on average equity,
- Pretax return on capital, and
- Operating margins.

Earnings are also viewed in relation to a company's burden of fixed charges. Otherwise-strong performance can be affected detrimentally by aggressive debt financing, and the opposite also is true. The primary fixed-charge coverage ratio is EBIT interest coverage (pretax income plus interest divided by interest). If preferred stock is outstanding, coverage ratios are calculated both including and excluding preferred dividends, to reflect the company's discretion over paying the dividend when under stress.

To reflect more accurately the ongoing earnings power of the firm, reported profit figures are adjusted. These adjustments remove the effect of foreign-exchange gains and losses, writedowns, and other nonrecurring or extraordinary gains and losses. Unremitted equity earnings of a subsidiary are also excluded. Adjustments are also made for the impact of hyperinflation on nonmonetary assets—gains are subtracted while losses are added back.

Shareholder pressures and accounting standards in certain countries, such as the U.S., can result in companies seeking to maximize profits on a quarter-to-quarter or short-term basis. In other regions, abetted by local tax regulation, it is normal practice to take provisions against earnings in good times to provide a cushion against downturns, resulting in a long run "smoothing" of reported earnings. For example, given local accounting standards, it is common to see a Swiss or German company vaguely report "other income" or "other expenses," which are largely provisions or provision reversals, as large items in a profit and loss account. In its meetings with management, Standard & Poor's delves into provisioning and depreciation practices to see to what extent a company employs noncash charges to reduce or bolster earnings.

There are numerous analytical adjustments to the interest accounts. Interest that has been capitalized is added back. An interest component is computed for debt-equivalents such as operating leases, fixed contractual obligations, and receivable sales. For U.S. utilities, allowance for funds used during construction is removed from income and interest expense.

In some regions, notably Japan and Europe, the local practice is to maintain a high level of debt while holding a large portfolio of cash and marketable securities. Many companies manage their finances on a net debt basis. When a company consistently demonstrates such excess liquidity, interest income may be offset against interest expense in looking at overall financial expenses. Each situation is evaluated on a case-by-case basis, in light of a company's liquidity position, normal working cash needs, nature of short-term borrowings, and funding philosophy.

Capital structure. The principal capital structure ratio analyzed is total debt to total debt plus equity. However, analyzing debt leverage goes beyond the balance sheet and covers quasi-debt items and elements of hidden financial leverage. Noncapitalized leases, debt guarantees, receivables financing, and purchased-power contracts are all considered debt equivalents and are reflected as debt in calculating capital structure ratios. Moreover, adjustments are made to reflect unfunded pension liabilities.

In countries where local practice is to hold significant cash and marketable securities, Standard & Poor's will focus on net debt leverage, which nets out excess liquidity from borrowings.

Most firms use short-term debt as a permanent piece of their capital structure or to bridge to permanent financing. Seasonal, self-liquidating debt is excluded from the permanent debt amount, but this situation is rare—except in the case of natural gas utilities. Given the long life of almost all utility assets, short-term debt exposes these companies to interest-rate volatility, remarketing risk, bank line backup risk, and regulatory exposure that cannot be readily offset. The lower cost of shorter-term obligations (assuming a positively sloped yield curve) partially mitigates the risk of interest-rate variability.

Also important is the term structure of a power company's long-term debt. Amortizing debt is less risky than bullet maturities, and may be more appropriate for certain companies with limited asset lives. Generators, in particular, may have a tendency to rapidly depreciate assets, so they face greater risk of mismatching assets and liabilities when they fund their operations with long-term bullet maturity debt.

What is considered "debt" and "equity" for the purpose of ratio calculation is not always simple. In the case of preferred stock and other hybrid securities, the analysis is based on their features, not the accounting or nomenclature. Pension and retiree health obligations are similar to debt in many respects.

Knowing the true values to assign to a company's assets is important to capital structure analysis. Consequently, assets are examined to identify undervalued or overvalued items. Asset valuation practices differ from country to country, resulting in differences in both a company's reported equity base and its depreciation expense. There is no easy way to compare companies that revalue their assets with those that do not. Rather, Standard & Poor's recognizes that, for all companies, reported asset values often differ from market values. In discussions with management, Standard & Poor's analysts endeavor to gain an appreciation of the realizable values of a company's assets under reasonably conservative assumptions.

Cash flow. Cash flow analysis is critical in all credit rating decisions. Interest or principal obligations cannot be serviced out of earnings, which is just an accounting concept; payment has to be made with cash. Many transactions and accounting entries can affect earnings but not cash, and vice versa. Analysis of cash flow patterns can reveal a level of debt-servicing capability that is either stronger or weaker than might be apparent from earnings. Since both common and preferred dividend payments are important to maintain capital market access, Standard & Poor's looks at cash flow measures both before and after dividends are paid. Working capital analysis is typically not a major factor in utility credit analysis given the relatively minor impact on cash flow from period to period. However, such analysis can be critical for certain utilities operating in developing economies—where late payment or nonpayment of bills can drive up receivables.

Cash flow is also measured against fixed contractual obligations, capital expenditures, debt maturities, and shareholder dividends.

Some of the specific ratios considered are:

- Funds from operations/total debt (adjusted for excess liquidity and off-balance-sheet liabilities).
- EBITDA/interest.
- Funds from operations - dividends/capital expenditures.
- Capital expenditures/total capital (debt + equity).

Because of the capital-intensive nature of the power industry and the lengthy periods sometimes necessary to construct facilities—particularly generating plants—utilities require extensive and flexible capital planning. The ability to limit the use of debt also depends on a utility's skill in managing construction projects and completing any new facilities on schedule and within cost estimates. Accordingly, Standard & Poor's reviews capital priorities for the next five years and beyond.

Financial flexibility. Financial flexibility incorporates a utility's financing needs, plans, and alternatives, as well as its flexibility to accomplish its financing program under stress without damaging creditworthiness. External funding capability complements internal cash flow. Especially since utilities are so capital intensive, a firm's ability to tap capital markets on an ongoing basis must be considered. Relationships with banks and the availability of bank lines are also reviewed. A utility's debt capacity reflects all the earlier elements: profitability, capital structure, and cash flow. Market access at reasonable rates is restricted if a reasonable capital structure is not maintained and the company's operational and financial prospects dim.

Standard & Poor's also reviews indenture and bank loan covenants. Certain restrictions, such as a limit on the ability to issue additional debt, provide some comfort, as do provisions that restrict the distribution of dividends unless there is adequate cash flow to provide for projected debt service (interest and principal). Other covenants viewed favorably are those that may reduce default risk, such as a requirement for a funded debt-service reserve. However, very tight covenants can raise default risk by limiting a company's flexibility to raise cash in times of crisis.

For investor-owned utilities, Standard & Poor's assesses a company's capacity and willingness to issue common equity. This is affected by various factors, including stock price, dividend policy, and any regulatory restrictions regarding the composition of the capital structure. For government-owned utilities, analysis focuses on the government's willingness and ability to inject equity as needed or to forgo dividends. An additional measure of financial flexibility important in the analysis of U.S. municipal utilities is ratemaking flexibility, taking into account both political and competitive considerations.

Transmission and distribution qualitative analysis

Reflecting relatively low business risk, electric transmission and distribution companies can be generally expected to have business pro-

file assessments of 1-4. However, few companies receive the top score and some do fall below a 4.

When evaluating electric transmission and distribution companies, Standard & Poor's is most concerned about the predictability and sustainability of financial performance. For typical transmission and distribution companies, regulation, markets, and management are more important factors than operations and competitiveness, although the relative emphasis on the factors may differ depending on the type of system. Regardless of type, the regulatory environment will have great impact. Variations in policies and practices among local and national regulatory bodies are key considerations. Markets and customer composition are also important factors, with weak economic performance and a large industrial sector being less favorable. Importantly, Standard & Poor's evaluates management, especially its leadership qualities and its response to industry changes.

Regulation. Regulation defines the environment in which a utility operates, and has great influence on the company's financial performance. A utility with a marginal financial profile can, at the same time, be considered highly creditworthy due to a supportive regulatory environment. Conversely, unpredictable or antagonistic regulatory action can undermine the financial position of utilities that are very strong from an operational standpoint. To be viewed positively, regulatory treatment should be timely and allow consistent performance from period to period, given the importance of financial stability as a rating consideration. Also important is the transparency of regulatory polices and the length of time that the regulatory framework has been in place. Clearly, there is concern that the mechanics of a recently privatized system could be revisited for fine tuning. Because of this, Standard & Poor's also examines the relative ease with which regulation can be changed. That is, a transparent system that requires legislative action to modify is viewed more favorably than one more subject to the whim of ministerial discretion, as in some Asian countries. Also key is the selection process for membership of a regulatory body.

Evaluation of regulation encompasses the administrative, judicial, and legislative processes involved in local or national regulation. These can affect rate-setting activities and other aspects of the business, such as competitive entry, environmental and safety rules, facility siting, and securities sales. In addition, the terms of a utility's license or franchise often impose obligations to serve any customer and provide a reasonable standard of service, and a variety of other stipulations. Ratings factor in the impact of such constraints and obligations on a utility's operations and financial performance.

Transmission and distribution companies are expected to remain tightly regulated monopolies, with rates set on a cost-plus basis in many circumstances. Under a cost-plus regime, rates are set to recover costs and, for investor-owned utilities, a return on shareholder investment. Under cost-based rates, Standard & Poor's analysis focuses on the predictability of costs and revenues. While a utility may be largely protected from business risk under cost-based rates, the responsiveness of the rate-setting process to changes in a utility's cost structure or to discrepancies between allowed and actual revenues influences the business pressures on the company.

One drawback to cost-based ratemaking is the lack of strong incentive for utilities to control costs. Since rates and earnings are closely linked to the amount of invested capital and the cost of capital, utilities may be rewarded more for justifying costs than for containing them. Consequently, Standard & Poor's believes that performance-based ratemaking will become an increasingly popular form of ratemaking, particularly for the distribution business. Because financial results can vary depending on a company's ability to meet performance challenges, performance-based systems are inherently more risky than cost-based systems. Flexible plans incorporating performance-based rewards or penalties could include market-based rates, price caps, revenue caps, index-based prices or other yardstick measures, and rates premised on the value of customer service.

Markets. Many distribution companies are common carriers. That is, they carry electricity being purchased by customers from independent suppliers, either generating companies or marketers. Other distributors participate in the energy marketing (supply) business by buying, brokering, or generating electricity through an affiliate, and selling the power to a customer. Risks in the marketing business include the significant challenge of matching fuel and power supply with demand. Whether a utility

is involved in the sale or brokering of electricity or merely distributes the commodity, prospects for the stable growth of revenues and cash flow are ultimately related to the strength of the local economy. Customer growth is important for distributors. And, even for utilities involved only in distribution and not in energy marketing, electricity consumption is important—because the typical distributor recovers some portion of its distribution costs through a volumetric, per kWh charge, in addition to any fixed monthly or quarterly customer charge that may be in place. Accordingly, assessing a distributor's markets begins with the economic and demographic evaluation of the area in which distribution services are provided. Strength of long-term demand is examined from a macroeconomic perspective, which enables Standard & Poor's to measure trends in investment, income, and employment as indicators of economic change within the service area. The sustainability of increasing demand is also analyzed. Many emerging economies go through periods of very rapid growth followed by severe contractions. This volatility can contribute to significant and unhealthy swings in a utility's revenues.

The analyst also tries to discern any secular consumption trends and, more importantly, the reasons behind them. Specific items addressed include the size and growth rate of the market, strength of the franchise, historical and projected growth, income levels and trends in population, employment, and per capita income. Other relevant factors include proximity to attractive markets, the quality of public infrastructure, and, particularly in developing countries, the affordability of electricity and customers' ability and willingness to pay their bills.

A distributor with a healthy economy and customer base, as illustrated by diverse employment opportunities, average or above-average wealth and income statistics, and low unemployment, is likely to exhibit greater revenue stability.

For electric distribution utilities, the number and type of customers, revenue analysis, and margin breakdowns are closely scrutinized to assess the depth and diversity of the utility's customer mix. For example, heavy industrial concentration is viewed cautiously, since the utility may have significant exposure to cyclical volatility. On the other hand, a large residential component produces a stable and more predictable revenue stream. The utility's largest customers are identified to determine their stability and relevance to the bottom line. Sometimes, the loss of just one large customer can have a material effect on the utility's financial position. Credit concerns arise where any one customer plays a dominant role in the overall economic base of the service area. Moreover, large customers may turn to self generation and leave the distribution system altogether, potentially leading to reduced financial protection for the utility.

Similarly, for electric transmission companies, the total number of customers—largely distributors—is evaluated to assess the depth and diversity of the transmission company's customer mix. The transmission company's largest distribution customers are identified to determine their stability and contribution to revenues. Also important to a transmission company is the strength and diversity of the end-use markets of its distribution customers. Accordingly, these end-use markets are evaluated from a macroeconomic perspective in an analysis identical to that described above for a distribution utility.

Another key consideration for a transmission company is the location of its transmission facilities. A transmission company that is strategically located to connect surplus low-cost generation with growth markets is best. On the other hand, a transmission company that connects relatively high-cost generation to a mature or declining area is at risk. Usage and electric growth levels in the end-use markets are compared with transmission capacity utilization. Underutilized transmission lines that serve growth markets have positive implications, while fully utilized lines that serve mature markets have less favorable implications.

Operations. Transmission and distribution operations are typically low risk. To evaluate the operations of a transmission or distribution company, Standard & Poor's focuses on cost, reliability, and quality of service. With gradually increasing competition in all segments of the electric power business, utility managers are under increasing pressure to optimize their use of resources. If utilities are not cost-effective in meeting service standards, compared to the performance of other utilities and administrative benchmarks, stronger regulatory or competitive pressures are likely.

Consequently, emphasis is placed on those areas that require management attention (in terms of time or money) and which, if unresolved, may lead to political, regulatory, or competitive problems.

In addition, the status of utility plant investment is reviewed, with regard to reliability and utilization, as well as for compliance with existing and contemplated environmental and other regulatory standards. The record of outages, system losses, and capacity utilization are examined. Important considerations include the projected capital improvements necessary to provide high-quality and reliable service. Additionally, unique operating challenges could be present that impact costs to a degree where credit quality suffers. Examples of operating challenges include harsh climates, severe storms, and difficult terrain.

Utilities in emerging countries face additional operating challenges, such as the fundamentals of metering and billing. Certain utilities may struggle with accurate and timely metering and billing because they do not have the appropriate technology, computer infrastructure, or control systems in place. Moreover, getting the bills correct and out in a timely fashion is only part of the issue. Collections can be a nagging problem where political or economic realities prevent service cutoff for nonpayment. In addition, outright theft of electricity service can be a big problem.

Assets must be in good physical condition and well maintained. Capital expenditures for system improvements must be at manageable levels, while sufficient to provide for constant renewal and refurbishment of the system. Operating performance, reliability statistics, and efficiency measures are expected to meet industry and regional averages. Having interconnections that provide access to low-cost and diverse power supply sources is viewed favorably, as is limited environmental exposure.

Competitiveness. Competitive pressures in the transmission and distribution businesses are generally quite limited by virtue of franchise monopolies. While introducing competition into the generation business and creating national or international power exchange systems is increasingly popular worldwide, there is near unanimous agreement that transmission and distribution systems should largely remain monopolies. This limited competition is a major factor in the strong business profile assessment for a typical transmission or distribution utility. Franchise monopolies are significant barriers to entry by competitors. Where there are nonexclusive franchises, other barriers to competitors exist, such as siting difficulties caused by public concerns over duplicate utility poles and wires and environmental issues.

Transmission and distribution utilities do face competitive pressures in the form of substitute energy sources and customer self-generation and bypass. Electricity competes with other fuels such as natural gas for certain segments of the market, like space heating, water heating, and cooking. Thus, high electricity prices, which may be caused by inefficient transmission or distribution service, are cause for concern if customers have alternate energy sources. Self-generation has for many years been a significant concern for larger commercial and industrial customers who have been able to take advantage of cogeneration technologies to significantly reduce their reliance on, and, in some cases, disconnect from transmission and distribution systems. In the future, technology could pose a greater threat for transmission and distribution companies. Bypass risk is likely to grow as distributed generation, microgeneration, and self-generation gradually become more economically attractive for smaller and smaller customers. However, these technological evolutions are likely to be gradual, so the currently configured transmission and distribution networks should continue to play a viable role for the foreseeable future.

Management. Owing to the safety net provided by regulation, evaluation of management is less critical for tightly regulated transmission and distribution companies than for generators or energy marketers operating in a very competitive environment. Still, assessing management remains significant, since management's abilities and decisions affect all areas of a company's operations, and ultimately drive the success of a company. Important considerations include strengths and weakness of key members of management, depth and stability of top management, and recent and prospective management changes. Management strategies are also a material determinant in differentiating utilities. Standard & Poor's assesses financial policies, corporate goals, strategies, tactics, and plans for both regulated and diversified businesses, and monitors how effectively they are implemented.

The assessment of management is based on such factors as tenure, industry experience, grasp of industry issues, and knowledge of customers and their needs. Management quality is also indicated by thoughtful balancing of public and private priorities, a record of credibility, and effective communication with the public, regulatory bodies, and the financial community.

Key financial policy considerations include commitment to credit quality. This can be assessed by evaluating accounting and financing practices, capitalization and common dividend objectives, and the company's philosophy regarding growth and risk taking.

Generation qualitative analysis

Generation is the riskiest segment of the electric utility industry due to complex operating risks and the increasingly competitive nature of the business. Risk may be further heightened by absence of the regulatory umbrella. Because of the higher risks, generators can generally be expected to have business profile assessments in the 7-10 range.

Generation is a commodity business. Electrons are physically indistinguishable from each other and therefore compete primarily on price. However, electricity has some characteristics that make it less like other commodities. Electricity cannot be stored. Electricity must be used instantaneously, as it is produced, and its deliverability can be hampered by transmission constraints. Reliability and deliverability distinguish one generating company from another, and perhaps elicit a premium in the marketplace. Value-added services, such as customization and load-following, can tailor the shape and firmness (or lack of firmness, for example, interruptible service) of electricity delivered to the customer.

Generation also faces unique operating risks. Because electricity cannot be stored, generating plants cannot afford to have unplanned outages. Of course, they are only paid when they run. Furthermore, contractual commitments could force a downed generator into the market to seek replacement power, which could be costly—or unavailable if the outage occurs during a peak usage period. Thus, while low production costs factor heavily into the business profile of a generation company, other criteria are considered when assessing creditworthiness.

Regulation. Some generators may remain highly regulated and achieve superior business profiles due to the more stable revenue stream. Some centralized supply systems derive strength and stability from their highly cohesive nature, stemming, in part, from direct or indirect cross ownership between generators and distributors, and government entities as ultimate owners. However, most global generators operate in deregulated environments, where rates are determined by the market.

Even so, regulatory considerations are still pertinent, and vary among global electric utility systems. Regulation typically establishes the basic framework of the electricity market. The market may be primarily a wholesale, rather than retail, market. The system may mandate that all players bid into a pool or exchange, whereby generators are economically dispatched and the last unit to run sets the market clearing price for all players. A power pool may have rules regarding price bids, dispatch, financial standing of market players, or other factors. Generators may have an obligation to build—or may be limited in building or investing. Furthermore, political stability, legal environment, and contract law influence the generator's operating environment and are examined under this heading. In general, regulation is likely to constrain upside profit potential, while providing little protection on the downside.

Standard & Poor's seeks to determine the regulatory posture toward credit quality. The length of time that the regulatory framework has been in place is noteworthy, given the potential for a relatively new system to be modified. The U.K. is notorious for having touted its competitive power pool, only to have the regulator step in and tamper with the pool's market clearing price.

In the U.S., the Federal Energy Regulatory Commission (FERC) has established regulations for nondiscriminatory interstate transmission pricing. Therefore, a transaction between a generation company and an end user will not be undermined by inflated wheeling fees. But market power issues are still being sorted out. FERC may prohibit mergers where bulking up on generation results in a utility being able to exert market power over its competitors. As a result, regulators may limit size and restrict certain contractual arrangements. Regulators may also set prudence requirements (financial creditworthiness) for entrants to the market. Questions asked include: How

will prices be established? Will there be a power pool or bilateral contracts only? (In bilateral contracts, buyers and sellers negotiate the terms, including cost, of the transaction.) Often times a pool transaction can be hedged to financially simulate a bilateral contract through "contracts for differences."

In some international systems, short-term marginal cost is determined by a pool, but the tariff also includes a charge to cover the long-run marginal cost of the next capital addition. This pricing system offers some greater assurance to the recovery of fixed costs and therefore lowers risk to the generator.

Markets. A generator's market expands as far as it can transport its electrons within physical (transmission) and economic (transportation fees) constraints. It typically has no obligation to serve, and may be free to hand pick its customers and negotiate its own contracts. While it is anticipated that in the U.S. all customers will be able to choose their supplier (retail wheeling), other countries permit retail access to only the very largest industrial entities. Markets in these countries are primarily wholesale. It is anticipated in the U.S. that residential and small customers will initially tend to stick with their local utility distribution company for supply. However, in pilot programs to date, many customers have exercised their option to choose and left their traditional suppliers.

As electricity markets become more liquid, prices become more transparent, and energy marketers and financial derivatives begin to develop. It remains to be seen if marketers can aggregate small customer loads effectively to make them economically desirable.

If a generator sells directly to end users, it is important to know the customer mix, in terms of residential, commercial, and industrial segments. A diverse customer base within a stable, growing economy would be positive from a credit risk perspective. An economy that is driven by only a handful of products or industries introduces concentration risk.

Further market evaluation looks at the economic prospects, inflationary pressures, and electricity consumption patterns within the country or region where the generating company operates. In developing countries, growth prospects would be higher than in a mature economy such as the U.S. However, strong growth could be subject to extreme volatility, due to recessionary or inflationary pressures. If one or a few industries dominate the region, growth prospects could be tied to the fate of that industry.

In terms of supply, who are the other players in the market, and what are the barriers to entry? How much capacity is there relative to demand? Surplus capacity could reduce sales and/or put pressure on margins. A deficit capacity situation would inflate margins over the short term, but encourage other entrants to the market. This would not necessarily be bad, depending on the incremental cost of supply (lower cost would be a threat to existing generators, higher cost would enhance the generating company's competitive position) and the subsequent surplus situation. If transmission constraints are relieved, either through construction or technology, the supply/demand balance changes. Generators may have access to a broader market, but other suppliers will have access to their customers as well.

Operations. An analysis of operations overlaps somewhat with examination of markets and competitiveness. The market within which a generating company is a player (local, regional, national, or international) has implications for how it operates. Transmission interconnections and constraints, as well as the location of a plant relative to customers, provide operating limitations and opportunities. Having a strategic location might necessitate that the plant be run constantly to provide system voltage support. And the efficiency of a generator's operations is directly tied to its competitive position.

Managing production inputs effectively is crucial to competitiveness. Suppliers of fuel, labor, and supplies are sources of economic risk to a generator's ability to produce low-cost power. The generator can be at risk if supplies are disrupted or prices are raised. A generator should diversify risk, as opposed to relying on a few suppliers. What has been the historic growth of operating and maintenance expenditures, and how will they be controlled (or reduced) prospectively? Efficient use of technology enables a generation company to manage its costs more efficiently.

Fuel typically represents about half the cost per kWh. Generators will need to become sophisticated in physical and financial hedging of fuel commodity risk. To the extent that a generation company has contracted to sell its output at a fixed price, it will be necessary to match the length of fuel contracts and hedges

to insure that margins are locked in. Some contracts permit a pass-through of fuel price changes, which might mitigate the necessity of hedging.

Contracts to sell a portion of production output at negotiated prices can protect generators from price and volume risk. Electricity markets are quite volatile, with prices fluctuating as much as 300% daily in U.S. markets. Contracts for differences are a common way to have price settlement around an erratic market clearing price. The mechanics, in very simple terms, are as follows: A buyer and seller agree on a price for power, say, 4 cents per kWh. If the market clears at 5 cents per kWh, the seller sells into the pool and receives 5 cents. The buyer must buy from the pool for 5 cents, which is 1 cent higher than his arrangement. To reconcile their 4 cent agreement, the seller pays the buyer 1 cent. Clearly, strategies will vary depending on how contracts are structured and how much of production is sold under contract versus on the spot market. These strategies are indicative of management's risk appetite.

In addition to these considerations, Standard & Poor's examines key statistical efficiency measures, such as capacity factor, availability factor, and heat rate of individual plants as compared to industry peers. Clearly, it is preferable to achieve parameters which exceed industry standards. Capacity factor measures the degree to which a plant is actually run over a certain period of time, while availability indicates what percent of the time it would have been available to operate. Heat rates measure a power plant's fuel efficiency. A low heat rate indicates less fuel input per unit of output. The average age of the facilities in the portfolio is also important; maintenance expense tends to increase as plants age.

The technologies utilized by a generating company also impact the assessment. New technology is riskier than proven designs. Moreover, nuclear facilities present greater-than-average risk in light of complex technology, additional operating challenges and concerns, and decommissioning costs.

Asset concentration risk is present where any one unit represents a disproportionate share of capital or output in the portfolio. Construction risk is considered in terms of the level of capital expenditures, demonstrated ability to complete projects on time and on budget, and success of start-up. Turnkey projects could transfer construction risks from the generator to the engineering firm. Lastly, environmental risks are evaluated. Imposition of a carbon tax could have significant financial consequences for coal-fired generation.

Diversity of the generation portfolio reduces the risk of dependence on any one unit, or any one fuel. Different fuel sources and the operating characteristics of the facilities (for example, base load versus peaking) further diversify the portfolio, and dual fuel capabilities at individual plants can enhance flexibility. Clearly, a single unit generator is inherently riskier than one with a portfolio of assets. The evolution of the merchant power plant has introduced a certain speculative element to the generation sector. Unlike their independent power producer predecessors, merchant plants are generally constructed without benefit of contractual commitments for the sale of their output. Thus, success depends on their ability to produce power consistently below the market's forward price curve for electricity. Since a merchant plant has less margin for error, it must have superior technological, marketing, finance, management, and operating skills, and be able to manage the risk of uncertain pricing and markets.

For generators selling into spot or short-term contractual markets, reliability is important. Generators who cannot deliver consistently on their commitments will lose credibility—and customers. This risk increases to the extent that the generating company is involved in marketing transactions beyond the sale of its own generation. Standard & Poor's believes that the more successful and higher-rated energy marketers will have leading national or regional market positions and need substantial physical and financial liquidity. Size is important because there are informational economies of scale in marketing, and smaller trading firms can be whipsawed. Generators with hard assets have a perceived advantage over energy traders with no owned assets.

Competitiveness. The first step of an analysis of competitiveness is to compare the generation company's cost of production to those of other market players. Unless there are overriding circumstances (for example, a must-run facility or an environmentally benign power source), a low-cost structure is crucial to a generator's success in a competitive environment. As important as the total cost is the variable cost of production—particularly in markets

with overcapacity. Since generators resemble other commodity industries, with their high capital costs, long-lived assets, and low labor content, they may pursue predatory price strategies in an attempt to gain market share. Thus, a generator's ability to beat its competitors' costs at the margin gives it a significant edge. In addition to analyzing marginal cost, Standard & Poor's compares a generator's average costs against contract prices, spot prices, pool prices, other producers, and new entrant costs.

Comparing costs, however, is not as straightforward as it might appear. The output of a plant greatly affects the cost of a unit of output, as fixed costs are spread over kWhs generated. This can make cost comparisons between base, intermediate, and peaking facilities difficult. The "peakier" the load curve, the higher the price of electricity at peak hours. As a result, a competitive strategy for a load-following generator might be to primarily operate during those more lucrative hours. First Hydro's generating plant in the U.K., a pumped storage hydro facility, has found this strategy to be quite lucrative. It pumps water into a reservoir during off-peak hours, and uses it to generate electricity during high-price peak hours.

Price comparisons will also become difficult as generating companies begin to customize packages for buyers. A package may include a combination of firm and interruptible power, with the interruptible portion being sold many times over. This type of customizing, or load-following, is a value-added service which may command a price premium.

Being competitive also involves strategies for structuring contracts, for deciding what percent of output to contract out versus sell into a spot market or pool, and for limiting the percent of output sold to any one customer. Staying competitive further involves both physical and financial hedging strategies, particularly for fuel.

Competition comes from many sources. Suppliers of new and cheaper power generation represent a threat to existing generating companies. New supplies may come from greenfield projects, renovation of existing facilities, or the opening of transmission pathways. Increasing power supply puts downward pressure on rates. Substitute products, particularly natural gas, also pose a competitive threat. This will become more complex as electric and gas markets "converge." Gas may become a greater threat to electricity usage over time due to the interchangeability of energy sources, as well as technological developments—such as gas-fired air conditioning. And further down the road, remote site applications such as the fuel cell may replace generation-produced power. Threat of these alternatives will depend on pricing, switching costs, availability, political and regulatory barriers, and public policy initiatives.

Management. The high business risk in generation—compared to transmission or distribution—makes management a critical factor in the credit evaluation of generators. In evaluating management, Standard & Poor's attempts to define management's risk appetite, and its overall goals and objectives. What strategies have been utilized to implement these goals, and how effective have they been? This dialogue may also provide insight into the degree of management's credibility to articulate, implement, and achieve its goals. Management's financial and diversification policies, including the appetite for construction of additional plants and/or diversification into international markets, is examined in assessing its risk tolerance.

The degree to which generators engage in energy marketing activities beyond the sale of their own output is also evaluated. Critically important to these activities are the generator's risk management guidelines that provide for the establishment and strict adherence to risk policies, objectives, and limits.